

REMARKS/ARGUMENTS

The Applicant's Attorney would like to thank the Examiner for his time during the telephone discussion on February 7, 2005. During the discussion, amendments to claims were discussed with regards to the cited references. The Examiner stated that the cited references do not teach a continuous ramp and requested a clarification to explain that a series of discrete steps that mimic a continuous ramping suggests a kind of step ramp, such as shown in FIG. 6, to distinguish this limitation from the cited references.

Claims 1, 13, 14, and 15 have been amended. Claims 11-12 have been canceled. Claims 16 and 19 have been added. Claims 1-10 and 13-19 are pending.

The Examiner objected to claim 14 stating certain informalities. Claim 14 has been amended accordingly.

The Examiner rejected claims 11-12 and 15 under 35 U.S.C. 112 as being indefinite. Claims 11 and 12 have been canceled. Claim 15 has been amended to be dependent on claim 14 to provide an antecedent claim for "the first etch plasma," "the second etch plasma," and "the third etch plasma."

The Examiner rejected claims 1-7 and 10-12 under 35 U.S.C. 102(b) as being anticipated by Bhardwaj et al. 6,051,503.

Claim 1 has been amended to recite that the ramping is at least one of a continuous ramping and a series of discrete steps that mimic a continuous ramping. Bhardwaj does not disclose or make obvious a ramp that is either a continuous ramping or a series of discrete steps that mimic a continuous ramping. A series of discrete steps that mimic a continuous ramping suggests a kind of step ramp, such as shown in FIG. 6 and described on page 10, lines 21 to 24, of the application. Col. 6, lines 43-49, of Bhardwaj states that "ramped" means that parameters are progressively increase or decrease cycle by cycle in amplitude or period, as illustrated in FIG. 9(ii). Therefore, Bhardwaj does not provide a continuous ramp but instead ramps cycle by cycle, as shown in FIG. 9(ii). As shown in FIG. 9(ii) of Bhardwaj each cycle has the signal reach an amplitude and then goes down to a base value before increasing to a new amplitude.

Since the signal value goes down to a base value during each cycle Bhardwaj does not have discrete steps that mimic a continuous ramping. Since the ramping of Bhardwaj is cycle by cycle, such ramping is not a series of discrete steps that mimic a continuous ramping, as recited in claim 1, as amended. For at least these reasons, claim 1, as amended, is not anticipated or made obvious by Bhardwaj.

The Examiner rejected claims 8 and 9 under 35 U.S.C. 103(a) as being unpatentable over Bhardwaj et al. 6,051,503 in view of Wang et al. 6,040,619.

The Examiner rejected claim 13 under 35 U.S.C. 103(a) as being unpatentable over Stolze 6,449,038 in view of Bhardwaj et al. 6,051,503.

Claim 13 has been amended to recite that the ramping is at least one of a continuous ramping and a series of discrete steps that mimic a continuous ramping. Bhardwaj does not disclose or make obvious a ramp that is either a continuous ramping or a series of discrete steps that mimic a continuous ramping. Col. 6, lines 43-49, of Bhardwaj states that "ramped" means that parameters are progressively increase or decrease cycle by cycle in amplitude or period, as illustrated in FIG. 9(ii). Therefore, Bhardwaj does not provide a continuous ramp but instead ramps cycle by cycle, as shown in FIG. 9(ii). Since the ramping of Bhardwaj is cycle by cycle, such ramping is not a series of discrete steps that mimic a continuous ramping, as recited in claim 13, as amended. For at least these reasons, claim 13, as amended, is not anticipated or made obvious by Bhardwaj.

Dependent claims 2-10 are also patentably distinct from cited references for at least the same reasons as those recited above for independent claim 1, upon which they ultimately depend. These dependent claims recite additional limitations that further distinguish these dependent claims from the cited references.

For example, claim 5 recites that the ramping occurs over a time period of greater than 30 seconds. Bhardwaj does not disclose or make obvious a continuous ramping or a series of discrete steps that mimic a continuous ramping for a time period greater than 30 seconds.

In addition, claim 6 recites that the ramping occurs over a period greater than 50% of the duration of the etch. Bhardwaj does not disclose or make obvious a continuous ramping or a series of discrete steps that mimic a continuous ramping for a time period greater than 50% of the etch.

In addition, claim 8 further recites that the etch layer is a dielectric layer. The Examiner stated that Bhardwaj fails to disclose that the etch layer is a dielectric layer, but that it would be obvious to modify Bhardwaj in view of Wang by using the dielectric layer of Wang because this layer is necessary to protect and insulate the substrate during semiconductor process. Dielectric layers and substrate layers require different etch parameters. An etch parameter that may successfully selectively etch a substrate may not successfully selectively etch a dielectric layer. *In re Vaeck* (20 USPQ2nd 1438) states that "Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 requires, inter alia, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have reasonable expectation of success." Nothing in Bhardwaj or Wang teaches or suggests that ramping would successfully improve the etching of a dielectric layer.

In addition, claim 9 further recites that the ramping increases etch aggressiveness with respect to etch stop. Wang in col. 4, line 55, to col. 5, line 5, teaches using two recipes, with one recipe to etch an insulator layer 42, col. 4, lines 56-64, and a second recipe to etch the etch stop, col. 4, line 65, to col. 5, line 5, of Wang. So Wang discusses different etch steps for different layers, not a ramped etch for a single layer, as recited in claim 9. For at least these reasons, claims 2-10 are not anticipated or made obvious by the cited references.

The Examiner stated that claim 14 would be allowable if rewritten or amended to overcome the objection set forth in the office action. Claim 14 has been amended accordingly.

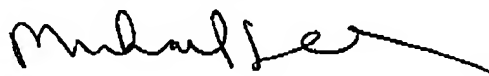
New claims 16 and 18 recite that the ramping is continuous. New claims 17 and 19 further recite that the ramping is over a time period greater than 30 seconds.

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a

telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number (650) 961-8300.

Respectfully submitted,

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